Streptococcal Disease, Invasive, Group A

Overview[1,2]

For a complete description of invasive, group A streptococcal disease refer to the following texts:

- Control of Communicable Diseases Manual (CCDM).
- Red Book, Report of the Committee on Infectious Diseases.

Case Definition[3]

Clinical description

Invasive group A streptococcal infections may manifest as any of several clinical syndromes, including pneumonia, bacteremia in association with cutaneous infection (e.g., cellulitis, erysipelas, or infection of a surgical or nonsurgical wound), deep soft-tissue infection (e.g., myositis or necrotizing fasciitis), meningitis, peritonitis, osteomyelitis, septic arthritis, postpartum sepsis (i.e., puerperal fever), neonatal sepsis, and nonfocal bacteremia.

Special Cases

- In the mid 1980s outbreaks of acute rheumatic fever began to occur throughout the United States, concomitant with the reappearance of certain streptococcal strains of highly rheumatogenic M serotypes. In some instances the infections give rise to shock and multiorgan failure, features that simulate in certain respects the staphylococcal toxic shock syndrome. This entity has thus been named the **streptococcal toxic shock syndrome** (STSS). [4]
- **Necrotizing fascitis** characteristically begins at a site of trivial or even in apparent trauma. The initial lesion may appear only as an area of mild erythema but over the next 24–72 hours undergoes a rapid evolution. By the fourth to fifth day, frank gangrenous changes are evident in the affected skin; followed by extensive sloughing. The process may march inexorably over large bodily areas unless measures are taken to contain it. Mortality rates are high even with appropriate treatment. [4]

Laboratory criteria for diagnosis

Isolation of group A *Streptococcus* (*Streptococcus pyogenes*) by culture from a normally sterile site (e.g., blood or cerebrospinal fluid, or, less commonly, joint, pleural, or pericardial fluid)

Case classification

Confirmed: a case that is laboratory confirmed

Information Needed for Investigation

Verify the diagnosis. What laboratory tests were conducted and what were the results? Laboratory testing will vary depending on the site of the infection. In general, a culture from a normally sterile site is necessary to establish a diagnosis. "Rapid" strep tests, while relatively accurate, are based on throat swabs and do not distinguish between invasive infections and normal carriage.

Establish the extent of illness. Determine if household or other close contacts are, or have been ill, by contacting the health care provider, patient or family member.

Contact the District Communicable Disease Coordinator if an outbreak is suspected; if cases are in high-risk settings or jobs such as food handlers, childcare, or health care; or for a single case of necrotizing fasciitis or STSS.

Contact Bureau of Child Care Safety and Licensure if cases are associated with childcare issues.

Case/Contact Follow Up And Control Measures

Determine the source of infection. The source may vary with the type or site of infection.

- Is there a history of pharyngitis or tonsillitis in the case or a household contact, especially a sibling?
- Does the case have contact with child care or school (especially elementary) children?
- Does the case or a member of the case's household work as a foodhandler or healthcare provider?
- Is there a history of cellulitis, surgery, or traumatic wound (regardless of severity)?
- Has the case consumed raw or unpasteurized milk?
- Does the case wrestle or engage in other sports that might combine abrasion with skin to skin contact?
- Have there been other cases linked by time, place or person?

Control Measures

See the Streptococcal Diseases section of the Control of Communicable Diseases Manual (CCDM), "Control of patient, contacts and the immediate environment".

See the Group A Streptococcal Infections section of the Red Book.

General:

- The spread of all types of GAS infection can be reduced by good hand washing, especially after coughing and sneezing and before preparing foods or eating.
- Personal hygiene, good nutrition and housing, good sanitation, and proper handling of secretions are important in controlling the spread of GAS.
- Penicillin continues to be the drug of choice. Many strains show resistance to Chloramphenicol, the aminoglycosides, sulfonamides, and tetracycline. While resistance to

erythromycin only runs from 1 - 5% in the US, elsewhere in the world it has been reported to be as high as 60%.[5] As a result, antibiotic sensitivity testing is highly recommended.

Foodhandlers:

- Persons diagnosed with streptococcal sore throat or with infected wounds or cuts on their hands should not handle food. They may return to food handling duties when they are afebrile and when approved by either the local health department or the Missouri Department of Health and Senior Services.
- Symptomatic contacts of persons with diagnosed GAS infections should be tested to determine the cause of their illness. Persons whose test for GAS is positive should refrain from handling food until they are afebrile and approved to return to work by either the local health department or the Missouri Department of Health and Senior Services.

Child Care:

- Strep sore throat can be common in childcare programs. Educating childcare attendants and the children on the importance of handwashing is key to preventing the spread of GAS in the child-care setting.
- All children and staff who have strep sore throat should be excluded from attendance until 24 hours after starting appropriate antibiotic therapy and they are afebrile
- When GAS infection is identified in a childcare attendee or staff member, other symptomatic attendees and staff members should be tested and appropriate antibiotic therapy should be instituted.
- To prevent spread of the infection, efforts should be made to prevent the transfer of children to other childcare centers. Closure of affected childcare centers may lead to placement of infected children in other centers (with subsequent transmission in those centers) and is generally counterproductive.
- When two or more symptomatic cases of GAS are identified in children or employees of a child- care facility, contact the District Communicable Disease Coordinator and the Bureau of Child Care *immediately.*

Laboratory Procedures

The State Public Health Lab does not currently test for GAS. Testing is available from most commercial and many hospital labs, which include antibiotic sensitivity to illuminate the growing possibility of antibiotic resistance. "Rapid" strep tests are available for use in physician's offices and elsewhere, and they have good specificity. They vary in their sensitivity, and may produce false negative results depending on the level of infection and the technique used to collect the specimen. They are generally used only for throat swabs. They do not distinguish between invasive infection and normal carriage.

Reporting Requirements

Invasive infection with Group A Streptococcus is a Category I disease and shall be reported to the local health authority or to the Missouri Department of Health and Senior Services within 24 hours of first knowledge or suspicion by telephone, facsimile or other rapid communication.

1. For all reported cases, complete a DHSS Disease Case Report form (CD-1).
2. For confirmed cases complete a "Record of Investigation of Communicable Disease (CD-2)
3. Entry of the completed CD-1 into the MOHSIS database negates the need for the paper CD-1 to be forwarded to the District Health Office.
4. Send the completed secondary investigation form to the District Health Office.
5. All outbreaks or "suspected" outbreaks must be prepared as soon as possible (by phone, fax or e-mail) to the District Communicable Disease Coordinator. This can be accomplished by completing the Missouri Outbreak Surveillance Report (CD-51).
6. Within 90 days from the conclusion of an outbreak, submit the final outbreak report to the District Communicable Disease Coordinator.

References

1. Chin, James, ed. "Streptococcal Diseases Caused by Group A (Beta Hemolytic) Streptococci." Control of Communicable Diseases in Man, 17th ed. Washington, D.C.: American Public Health Association, 2000: 470-476
2. American Academy of Pediatrics. "Group A Streptococcal Infections." In: Pickering, LK, ed. 2000 Red Book: Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL. 2000: 526-536
3. Centers for Disease Control. Case Definitions for Infectious Conditions Under Public Health Surveillance. MMWR 1997; 32 (RR-10)
4. Mandell, GL, Bennett, JE, and Dolin, R, ed. Mandell Douglas and Bennett's Principles and Practice of Infectious Diseases, 4th ed. New York: Churchill Livingstone, 1995: 1789-1799.
5. Evans, AS and Brachman, PS, ed. Bacterial Infections of Humans Epidemiology and Control, 3rd ed. New York: Plenum, 1998: 673-711.
6. Donowitz, Leigh G., ed. Infection Control in the Child Care Center and Preschool, 3rd ed., Baltimore, MD, Williams & Wilkins, 1996: 264-267

Other Sources Of Information

Web Sites

1. NCID Fact Sheet. Group A Streptococcal (GAS) Disease http://www.cdc.gov/ncidod/dbmd/diseaseinfo/groupastreptococcal_g.htm (27 June 2002)
2. New York State HD Fact Sheet. Invasive Group A Streptococcus. http://www.health.state.ny.us/nysdoh/consumer/gas.htm (27 June 2002)
3. NIH/NIAID Fact Sheet. Group A Streptococcal Infections. http://www.niaid.nih.gov/factsheets/strep.htm (27 June 2002)
4. Centers for Disease Control and Prevention. Research Article on Trends of Infection; EID Vol. 2, No. 1; January – March 1996. http://www.cdc.gov/ncidod/EID/vol2no1/strepyro.htm (27 June 2002)
5. University of Texas, Houston Medical School Course Ref. Streptococcus. http://medic.med.uth.tmc.edu/path/00001457.htm (27 June 2002)